MAR 23 1920

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Presents

TUNNELLING UNDER EAST RIVER

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1.

Six and one quarter million passengers are carried each day by the subway, elevated and surface car lines of Greater New York City. This number is steadily increasing and necessitates constant additions to the transportation systems.

One of the newest additions is the tunnel now being built under the East River from East Fourteenth Street, Manhattan, to North Seventh Street Brooklyn.

2.

Profile on center line.

The river section is 3500 feet in length.

3.

The work of driving the tunnel is carried on simultaneously from each side of the river. Temporary shafts are sunk to the required depth and the tunnels are driven in each direction from the foot of these shafts.

4.

The East Fourteenth Street storage yards showing platforms and head frames over shafts.

5.

Gravel storage with clam-shell bucket in operation.

6.

Loading Plates for Delivery to Tunnel.

The tunnel is lined with cast iron rings made up of nine plates and a key. These rings are two feet in width and weigh approximately six and one half tons each.

7.

The material is taken from cage at foot of shaft and delivered to the desired point by an electric motor car.

8.

Air Lock and Bulkhead.

At a depth of one hundred feet the water pressure is 43 pounds per square inch. To balance this pressure and prevent water entering tunnel compressed air at a pressure of 35 pounds per square inch was maintained in the heading during construction.

9.

Section of tunnel after excavation.

10.

Concrete cradle which is the foundation upon which the iron rings are erected.

11.

Erecting iron rings.

12.

Hemp grommets soaked in red lead and oil are placed on each end of bolt between washer and plate; the action of tightening bolt squeezes grommets into bolt hole making them water right.

13.

Space between rings and rock is filled with broken stone. Cement grout is later forced into spaces in rock packing thus forming a solid mass out side of plates.

14.

All joints between plates are provided with a recess for caulking. The caulking material is lead wire three eighths inches in diameter driven in with a compressed air hammer.

15.

Cross passage between the two tubes for construction purposes. The passage will be solidly filled when work is completed.

16.

A concrete lining is placed inside the iron rings great care being taken to fill the plates solidly. This lining serves a double purpose; it adds strength to the tunnel and prevents oxidation of the cast iron plates.

17.

Conduits for electric power, signal and telephone cables are built into each side wall.

18.

Ready for tracks.

19.

The tunnel will consist of two parallel tubes, each eighteen feet out side diameter, with twelve feet of solid rock between them at their nearest points.

20.

At the foot of each shaft and at the center of river sumps or pits equipped with automatic electric pumps are installed to care for any water that may enter tunnel after it is completed.

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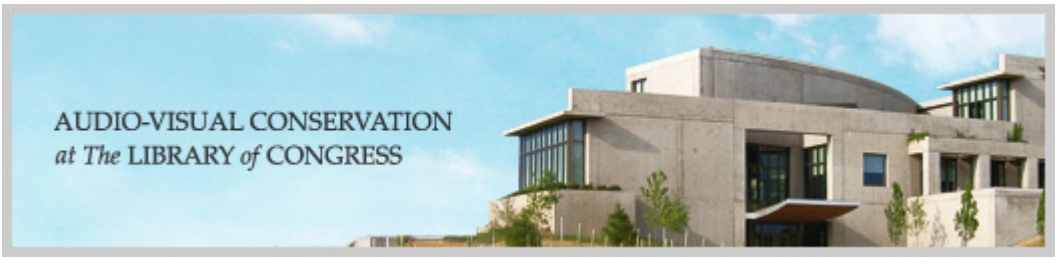

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